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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,983	05/16/2008	Alexander Fischer	2004P00446WOUS	8827

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EXAMINER

GODBOLD, DOUGLAS

ART UNIT	PAPER NUMBER
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2626

NOTIFICATION DATE	DELIVERY MODE
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07/18/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/597,983	Applicant(s) FISCHER ET AL.	
	Examiner DOUGLAS GODBOLD	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 8-13 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20070302</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to correspondence filed June 30, 2011 in reference to application 10/597,983. Claims 1-15 are pending and 1-7 and 14 have been examined.

Information Disclosure Statement

2. The Information Disclosure Statement filed March 2, 2007 has been accepted and considered in this office action.

Election/Restrictions

3. Claims 8-13 and 15 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Group II, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on June 30, 2011.

Specification

4. The disclosure is objected to because of the following informalities: Throughout the specification, “recogniser” should be “recognizer”.

Appropriate correction is required.

Claim Objections

5. Claims 1 and 14 objected to because of the following informalities: “recogniser” should be “recognizer”. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claim 14 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

8. Although **claim(s) 14** appear to fall within a statutory category (*i.e., apparatus*), claim(s) 14 encompass nothing more than logic/software modules as per the specification (*“units, modules blocks and devices described may be realized..... by implementing software modules”, Page 13 lines 14-16*). Thus, claim(s) 14 are directed to non-statutory subject matter because their scope includes a computer program embodiment, an abstract data structure which does not fall within one of the four statutory categories (*i.e., it is directed to a program per se*).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 4, 5, 7, 8, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al (US Patent 6,199,041) in view of Liljeryd et al. (US PAP 2004/0125878)

11. Consider claim 1, Liu teaches a method for generating training data for an automatic speech recognizer for operating at a particular first sampling frequency (abstract), comprising the following steps:

deriving spectral characteristics from audio data sampled at a second frequency lower than the first sampling frequency (Col 3 line 50- col. 4. line 30, signals are converted to a log-spectra, col. 3 line 60, may be applied to up sampling case);

processing the bandwidth extended spectral characteristics to give the required training data (Col 6, line 50-65, training data transformation).

Liu does not specifically teach extending the bandwidth of the spectral characteristics by retrieving bandwidth extending information from a codebook.

In the same field of signal resampling, Liljeryd teaches extending the bandwidth of the spectral characteristics by retrieving bandwidth extending information from a codebook (para. 0006-0011, especially 0008, codebook used to perform extension).

Therefore it would obvious to one of ordinary skill in the art at the time of the invention to use the bandwidth extension method of Liljeryd in they system Liu in order to allow for improvements in audio quality for the training data, allowing training data to

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match operating conditions, leading to better recognition results; (Liljeryd 0006 and Lie Col 1 lines 12-32).

12. Consider claim 4, Liljeryd teaches a method according to claim 1, where the processing of bandwidth extended spectral characteristics comprises a step of altering the spectrum to adjust signal properties of the audio data (para. 0006-0011, spectrum is expanded).

13. Consider claim 5, Liljeryd teaches a method according to claim 4, where the step of altering the spectrum to adjust the signal properties of the audio data is performed in the linear domain (0005, prior art methods expand using linear frequency shifts).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the prior art expansion methods disclosed by Liljeryd in the system of Liu and Liljeryd in order to provide a well known method of bandwidth expansion.

14. Consider claim 7, Liu teaches a method for training an automatic speech recognition system wherein the data used for training are at least partially generated using a method according to claim 1 (Col 6, line 50-65, training data transformation).

15. Consider claim 14, Liu teaches a system (1) for generating training data (DT) for an automatic speech recognizer (2) operating at a particular first sampling frequency (fH), (abstract) comprising:

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A converter for deriving spectral characteristics from audio data sampled at a second frequency lower than the first sampling frequency (Col 3 line 50- col. 4. line 30, signals are converted to a log-spectra, col. 3 line 60, may be applied to up sampling case);

A processing module for processing the bandwidth extended spectral characteristics to give the required training data (Col 6, line 50-65, training data transformation).

Liu does not specifically teach a retrieval unit for retrieving bandwidth extending information for the spectral characteristics from a codebook;

In the same field of signal resampling, Liljeryd teaches a retrieval unit for retrieving bandwidth extending information for the spectral characteristics from a codebook; (para. 0006-0011, especially 0008, codebook used to perform extension).

Therefore it would obvious to one of ordinary skill in the art at the time of the invention to use the bandwidth extension method of Liljeryd in they system Liu in order to allow for improvements in audio quality for the training data, allowing training data to match operating conditions, leading to better recognition results; (Liljeryd 0006 and Lie Col 1 lines 12-32).

16. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu and Liljeryd as applied to claims 1 above, and further in view of Enbom et al. (Bandwidth Expansion of Speech Based on Vector Quantization of the Mel Frequency Ceptrsal Coefficients).

17. Consider claim 2, Liu and Liljeryd teach a method according to claim i1 where the conversion of audio data into sets of spectral characteristics comprises calculating the FFT of the audio data to give a set of Fourier coefficients (Liljeryd 0013, FFT algorithms can be used).

Liu and Liljeryd do not specifically teach filtering the output of the FFT with a filterbank to give a set of filterbank power values.

In the same field of bandwidth expansion, Enbom teaches filtering the output of the FFT with a filterbank to give a set of filterbank power values (systems use power spectrums as the basis for expansion, Section 2.1).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use power spectrums as taught by Enbom in the system of Liu and Liljeryd in order to provide a well know way of representing the spectrum to perform bandwidth expansion (Enbom section 2.1).

18. Consider claim 3, Enbom teaches a method according to claim 2, where the conversion of audio data into sets of spectral characteristics comprises processing the FFT coefficients or the filterbank power values to give a set of log-spectral coefficients (section 2.1, use Log power spectrums).

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19. Claims 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu and Liljeryd as applied to claims 1 above, and further in view of Gong et al. (US Patent 6,381,571).

20. Consider claim 6, Liu and Liljeryd teaches a method according claim 1, but does not specifically teach where the derivation of the spectral characteristics from audio data is followed by a step subtracting the mean spectrum from the spectral characteristics.

In the same field of speech recognition, Gong teaches the derivation of the spectral characteristics from audio data is followed by a step subtracting the mean spectrum from the spectral characteristics (Col. 4 lines 55-63, mean spectrum is subtracted from the observed spectrum)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the spectral subtraction of Gong in the system of Lie and Liljeryd in order to reduce inaccuracies in recognition dues to distortions, (Gong Col 1 lines 23-29).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Douglas C Godbold/
Primary Examiner, Art Unit 2626